PADUCAH GASEOUS DIFFUSION PLANT SITE SPECIFIC ADVISORY BOARD

padssab@apex.net

www.oro.doe.gov/pgdpssab/

2000 McCracken Boulevard • Paducah, Kentucky 42001 • (270) 744-9010

Chair

Craig Rhodes

Board Members

Kit Atkinson

Nola Courtney

Mark Donham

Edward Duff

Judy Ingram

Vicki Jones

Merryman Kemp

Ronald Lamb

Linda Long

Douglas Raper

Craig Rhodes

Rosa Scott

Jim Smart, Ph.D.

Bill Tanner

Rev. Gregory Waldrop

Ex Officio Members

Carl Froede, Jr.

Environmental Protection Agency

Wayne L. Davis

Fish and Wildlife Resources

(Kentucky)

Tuss Taylor Division for Waste Management

(Kentucky)

John A. Volpe, Ph.D.

Radiation Control Branch

(Kentucky)

Don Seaborg

Department of Energy

DOE Federal Coordinator

John D. Sheppard

Additional information about contacting board members directly can be obtained from the SSAB web site or by contacting Shirley Speer at (270)744-9010.

Site Specific Advisory Board Special Meeting Minutes June 1, 2000

The June 1, 2000, Site Specific Advisory Board (SSAB) special meeting took place at the Information Age Park Resource Center in Paducah at 5:30 p.m.

The following board members were present: Nola Courtney, Mark Donham, Merryman Kemp, Linda Long, Doug Raper, Craig Rhodes, Jim Smart and Gregory Waldrop. Ex Officio members present were: Carl Froede, Environmental Protection Agency (EPA), Don Seaborg, Department of Energy (DOE) and John Volpe of the Kentucky Radiation Control Branch. The DOE federal coordinator present was John Sheppard. Gaye Brewer, and Mike Guffey of the Kentucky Division of Waste Management (KDWM), were present. Stan Cook of Kentucky Division Air Quality was present. Steve Alexandra of United States Fish and Wildlife Service (USFWS) was present. Jim Lane and Tim Kreher of Kentucky Division of Fish and Wildlife (KDFWR) were present. Also present were the following members of the public and employees, contractors, and subcontractors of the DOE: Kelly Ausbrooks, Raul Castaneda, Michael Clevenger, Greg Cook, Gordon Dover, Diana Feireisel, Bruce Gardner, Steve Hampson, Norm Jetta, Craig Jones, Celina Kulp, John Lowry, James Malone, Dave Massey, Steve Meiners, Heather Mitchell, Al Puckett, Jennifer Sacharnoski, Greg Shaia, Shirley Speer, M'balia Tagoe, Mitzi Warford, Rick Watson, Corinne Whitehead and Ernest Whitehead.

Agenda

Craig Rhodes called the meeting to order and explained this was a special meeting regarding Drum Mountain.

Animal Data

Seaborg stated the completed report was in the DOE office for review. He said the report would be sent out to public in two to three weeks. Donham asked Seaborg if this procedure met NEPA requirements. Seaborg said he was not going to address NEPA. Waldrop asked if the animals whose homes were being disturbed would be contained. Seaborg said no. Donham asked what parts of the animals had been tested for the study. Craig Jones addressed the testing procedures. Kemp asked if there were any animals that did not show PCBs. Jones said levels were low, above detection limits, but low in the animals tested. Donham asked if DOE ever planned to do an ecological study. Seaborg said there was no way of doing a complete characterization without tearing everything apart.

Sheppard commented that the presentation would answer many questions and suggested moving to presentation. Greg Shaia of Bechtel Jacobs made presentation and provided handouts.

Puckett asked about particulates during shredding. He asked if DOE was aware of transuranics and how they had come to the plant. Shaia said that process knowledge said that transuranics were not at levels to be concerned about. He said that tests so far shows lots of uranium. Seaborg referred to the March 1999 EE/CA and said they realize there may be high levels of plutonium but there were contingency programs in place for all possibilities. Sheppard said the important point is that we have the data and have put precaution in place and would move cautiously.

Waldrop asked how long after the sampling before the results. Ausbrooks said depending on the project size approximately an hour. It was explained that during testing the workers remained in the respirators. Seaborg repeated that there could be anomalies but they would have to wrong 300 percent for it to matter. He said the risk does not merit real time monitoring. Puckett asked if monitoring results would be public.

Donham asked if provisions had been made for dry and windy days and talked more about the advantages of containment. Seaborg said that costs does not justify containment. Donham said we have heard 'no risk' for years and spent 400 million dollars on characterization why save a little and not characterize now. Seaborg said that to tear down Drum Mountain and characterize more does not make any sense. DOE wants to characterize as they go and get it ready to move off-site so characterization can be done on what is under Drum Mountain.

Smart noted that in the Health and Safety Plan, there was a map to Lourdes Hospital. He asked if the hospital personnel had been trained in what to do in case of an emergency. Sheppard said the site medical services are notified as well as the personnel at Lourdes.

Water

Mike Guffey, Project Lead, of KDWM, said Air Quality had added four new sediment controls an will put in one especially for Drum Mountain.

Seaborg discussed background exposure and ALARA (As low as reasonably acceptable). Waldrop asked who is responsible for ALARA. USEC, SEC, DOE, and Westinghouse were named. Donham asked what Seaborg was doing to make sure people feel free to say if there is a problem. Seaborg said DOE has a site representative and number of other people. Gordon explained that every person is trained and encouraged to exercise STOP work authority if needed.

Kulp asked if there would be a decision or if the discussion would go on all evening. Seaborg explained that DOE wants to give the board a chance to be heard but ultimately he has to decide. He said there would be times when DOE and the board would not agree.

Characterization

Envirocare will test again when it arrives to see that the levels are acceptable. Donham asked why levels of sampling in 1997 Workplan were so much lower than in testing in 2000. Shaia explained the differences in the sample content was because of where the samples had been taken. Rhodes asked for clarification on who and how many would be watching the waste as it moved through the process. Shaia showed on the slide how many would be monitoring and how the waste would go through 'channels'. Donham asked if the health physicists would be filling out daily reports and could the Board get that information. Seaborg said yes.

Donham asked what would be done with the shredder after this project was finished. Shaia said that was "to be decided."

Waldrop asked if a representative of Health Physics or someone could give an extensive report at the June 15 meeting. Seaborg agreed. There was also discussion regarding public meetings to inform neighbors as the work began and proceeded with removal of Drum Mountain. Rhodes suggested firming up ideas on the meetings so the board could make a reccomendation at the June 15 meeting.

Meeting adjourned.

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Craig Rhodes

Tentative agenda for the June 15, 2000 meeting:

Board Members

5:30

Kit Atkinson

Informal discussion

Nola Courtney

6:00

Mark Donham

Call to order, introductions

Edward Duff

Review of agenda

Judy Ingram Vicki Jones

Approval of minutes from April meeting

Merryman Kemp

Site Manager's Comments

- 60 minutes

Ronald Lamb

ES&H issues, investigation

Other Linda Long

Douglas Raper

Board discussion

Craig Rhodes

Public comments and questions

Rosa Scott

Bill Tanner

- 5 minutes

Jim Smart, Ph.D.

SSAB recommendations status

-20 minutes

Rev. Gregory Waldrop

Project status updates **EM&EF Projects**

Drum Mountain/Scrap Metal

Ex Officio Members

Board discussion

Carl Froede, Jr. Environmental Protection Agency

Public comments and questions

Wayne L. Davis

Presentations

- 60 minutes

Fish and Wildlife Resources

(Kentucky)

1. Groundwater Operable Unit/Permeable Treatment Zone

2. On-site disposal facility

Board discussion

Public comments and questions

Tuss Taylor Division of Waste Management (Kentucky)

John A. Volpe, Ph.D.

Radiation Control Branch

Administrative issues Review of SSAB Draft Workplan -15 minutes

(Kentucky)

Don Seaborg Department of Energy Financial update

— 15 minutes

DOE Federal Coordinator John D. Sheppard

SSAB Subcommittee Reports

On-Site Disposal Facility Community Relations

Consultant

contacting board members directly can be obtained from the SSAB web site or by contacting Shirley Speer at

(270) 744-9010.

Additional information about

Membership

Adjourn

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Site Specific Advisory Board Meeting Minutes June 15, 2000

The June 15, 2000, Site Specific Advisory Board (SSAB) meeting took place at the Information Age Park Resource Center in Paducah at 5:30 p.m.

The following board members were present: Nola Courtney, Ed Duff, Judy Ingram, Vicki Jones, Merryman Kemp, Ronnie Lamb, Linda Long, Doug Raper, Craig Rhodes, Jim Smart, and Greg Waldrop The facilitator present was Steve Kay. Ex Officio members present were: Carl Froede, Environmental Protection Agency (EPA) and Don Seaborg, Department of Energy (DOE). Janet Miller, Kentucky Division of Waste Management (KDWM). The DOE federal coordinator present was John Sheppard. Todd Adams and Eric Scott of the Kentucky Radiation Control Branch were present. Jim Lane of Kentucky Fish and Wildlife Resources (KDFWR) was present. Also present were the following members of the public and employees, contractors, and subcontractors of the DOE: Raul Castaneda, Greg Cook, Gordon Dover, Diana Feireisel, Bruce Gardner, Gary Hettler, Norm Jetta, Celina Kulp, Eric Morti, Jim Suridulis, Walter Perry, Jennifer Sacharnoski, Shirley Speer, and M'balia Tagoe.

Agenda

Craig Rhodes called the meeting to order and asked if there were any modifications to the agenda. It was decided there would be no report from Community Relations Subcommittee and no report regarding the Consultant. **The amended agenda was approved.**

Minutes

The May 18, 2000 SSAB meeting minutes had two amendments. The amendments were to be checked according to the tape from the meeting. The May minutes would be considered for approval at the July SSAB meeting after changes have been made. The minutes for the June 1, 2000 Special SSAB meeting were approved by consensus.

Site Manager's Comments

Don Seaborg addressed board with an update on potential concerns since last meeting. He explained that two pipes had been found during some excavation and had been checked out for any problems. He said that the Work for Others investigation was close to being finished. He said that the Department of Justice is still working on the qui tam lawsuit investigation. He explained the delay in starting the work on Drum Mountain and said that Gordon would expand on that later in the meeting. He noted that the Animal Study Report, the CERCLA Cell Report, and the Groundwater Operable Unit Feasibility Study were not ready to go out but that the Board would get them as soon as they were ready.

SSAB recommendation status

The board will be receiving formal letters of response to the recommendations. Number five is still waiting for more input from the board's subcommittee.

Rhodes asked for more clarification on the pipes that had been found. Gordon said they had checked them and there was no problem with them. Seaborg read summary regarding the pipe finding.

Waldrop commented that he had sent a request through Greg Cook and wanted to thank him for his timely response. Rhodes asked the board if they wanted to be copied on all emails sent to him as chairperson. The board said for Rhodes to use his judgment in what he forwarded.

Project Status Updates

Dover said some testing would be done on Monday and Tuesday. They were adding additional windscreens. Sheppard said they were fine-tuning the operation. Dover said they did not anticipate this delaying the finish. Lamb said he had heard that large amounts of plutonium had been found in Big Bayou Creek. Dover said no. Rhodes asked about the testing of the equipment. Dover said they were running clean materials through to the equipment. Rhodes asked why they had decided to add more windscreens. Dover said there had been a windy day and USEC had decided to take extra precaution. Froede said State and EPA had issued approval letters on the D2 and they are free to go to work.

Feireisel gave a report on the Core team. She said the minutes would be provided to the

board as soon as they were approved.

Presentations

Eric Morti gave a presentation on the Permeable Treatment Zone. Handouts were given to attendees. Froede said that EPA is looking at other options also. Sheppard said this treatment had been looked at by the ITRD and would be most effective in conjunction with other techniques.

Administrative Issues

Workplan

Drum Mountain EE/CA is to be addressed at the July meeting. In August, the financial subcommittee will have a report. Dates for a town meeting were discussed so a report of the meeting could be added to the workplan.

Seaborg introduced John Anderson of PACRO. Waldrop asked if Anderson would like to address the board. Anderson addressed some of the allocations of money. He explained some of the surveys and programs of PACRO and some of the things they are considering.

Financial Update

Waldrop questioned the cost of the mailing list. Gardner said it was the yearly cost broken down per month.

Membership

Courtney expressed her frustration in the time it takes to get new membership packets through DOE Headquarters. The new members applications were approved by the Board and submitted in March. She questioned why and how it could take so long for them to get to DOE headquarters. It was explained that the membership packet had been submitted but that it had been sent back and forth due to guideline changes. Sheppard said he would check on the progress of the membership applications. Courtney again asked for a committee to help with the membership. Judy Ingram, Merryman Kemp, and Greg Waldrop volunteered and Rhodes appointed them to be on the subcommittee with Courtney. Sheppard said he would get current procedures for application for the Board. He said the board should not arbitrarily eliminate the opportunity for a person to serve on the Board and should insure that broad diversity of opinion is met. He discussed some of the guidelines and again stated that he would get a copy of current procedures to the Board.

Ed Duff resigned from the Board effective immediately. The board thanked Mr. Duff for his contribution to the board.

Board Retreat

The retreat for the board was discussed at length. The location is to be decided from list discussed and plans are to be made.

Rhodes appointed a subcommittee to decide on a tentative agenda for the retreat. The committee consists of Nola Courtney, Craig Rhodes, John Sheppard and Steve Kay.

Meeting adjourned.

PGDP SSAB Proposed Retreat Agenda August 25 and 26, 2000

Friday evening

7:30

Welcome and review of the proposed retreat agenda: Craig

Review of PGDP SSAB mission and scope

brief comments on key elements, by the retreat planning group : Craig, Nola, John, Steve open discussion

<u>9:00</u>

Adjourn

Saturday

9:00

Review of federal regulations and guidelines

FACA EMSSAB Charter FOIA Other

<u>10:30</u>

Break

10:45

Review of board process

roles of facilitator, ex officio members, other agency representatives, and contractors: Steve

achieving greater participation, and more balance in board discussions: Craig

attendance committee tasks national chairs' meeting 12:00 Lunch

1:00

Review of board process, continued

decision making process: Steve

formation and monitoring of board budget: Craig

relation to the public: Greg

3:00 Break

<u>3:15</u>

Review of board process, continued

other issues

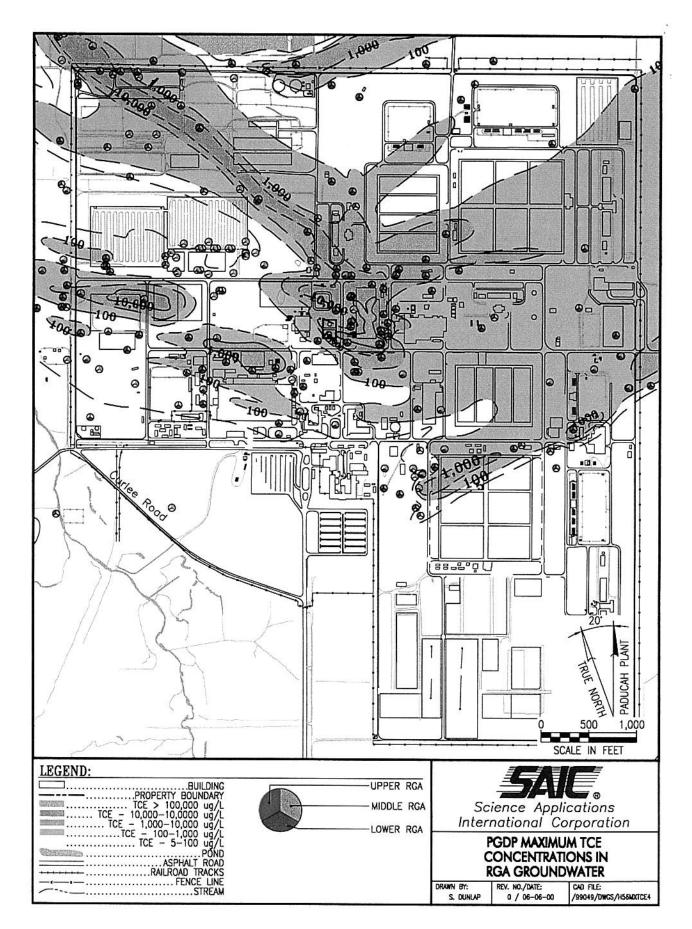
5:00

Adjourn

PERMEABLE TREATMENT **IREATABILITY STUDY** AT THE PGDP ZONE

Presented to the Paducah Gaseous Diffusion Plant Site Specific Advisory Board

June 15, 2000



PGDP Maximum TCE Concentrations in RGA Groundwater

TREATABILITY STUDY ~ WHERE? PERMEABLE TREATMENT ZONE

- On west side of PGDP, immediately west of plant security fence
- Within high concentration core of the Southwest Plume
- Estimated TCE concentrations between 800 and 1200 ug/L

Estimated Tc-99 activities between 2500 and 3000 pCi/L

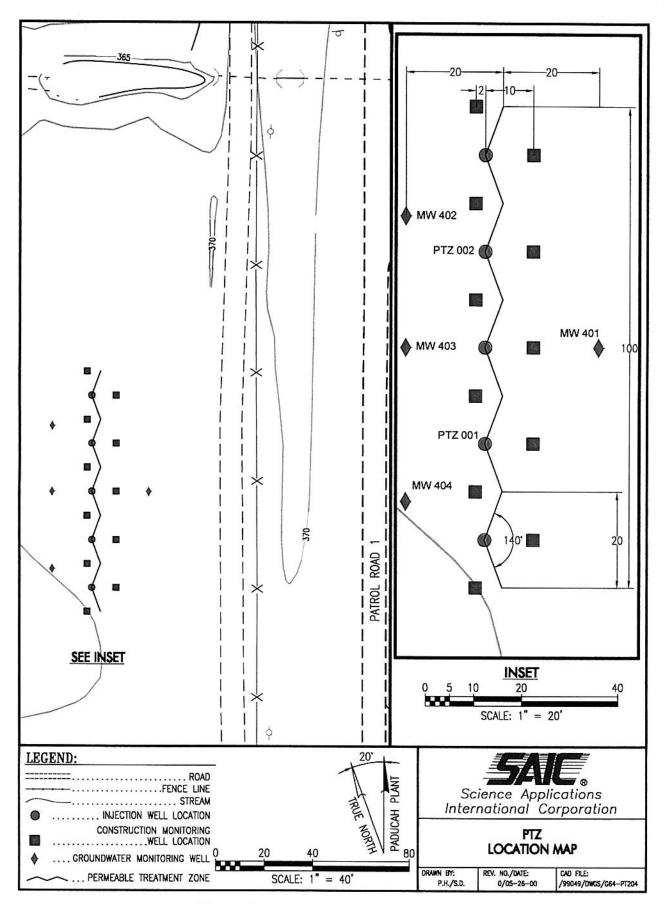
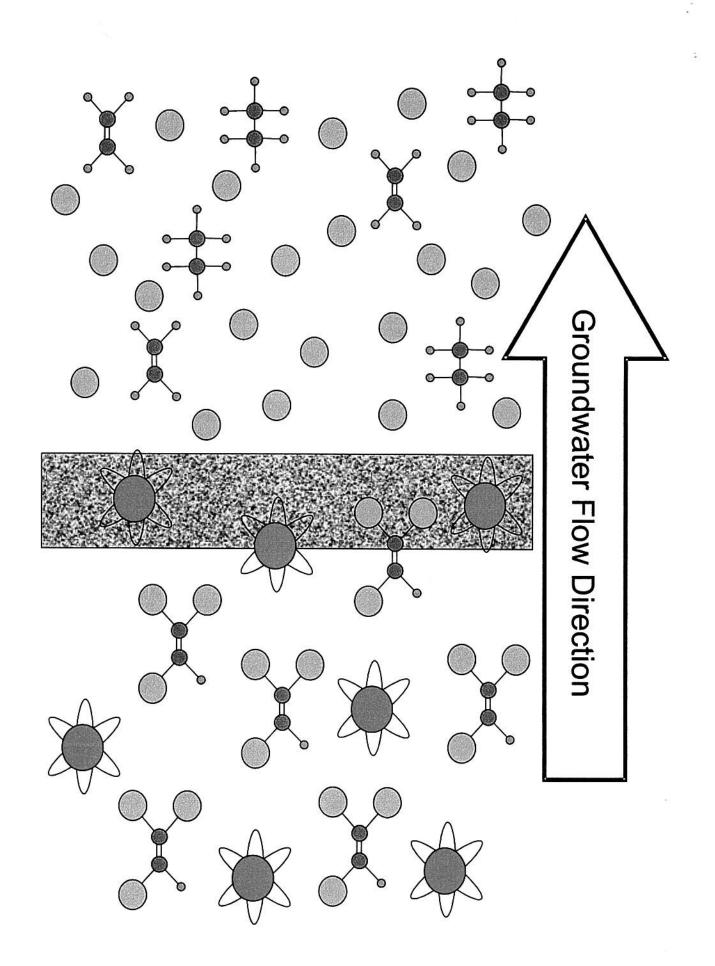


Fig. A.1. Planned location of treatability study zone

TREATABILITY STUDY ~ WHERE? PERMEABLE TREATMENT ZONE

- Immediately south of KPDES Outfall 015
- Southwest of LASAGNA site
- groundwater flow Orientation is north-south, roughly perpendicular to direction of
- Net length of PTZ will be approximately 100 feet
- below ground with bottom as deep as 120 feet below ground Depending on site conditions, top of PTZ will be as shallow as 50 feet
- PTZ height will be between 50 and 70 feet
- PTZ thickness will be approximately 3 inches



PERMEABLE TREATMENT ZONE **HOW DOES A PTZ WORK?** TREATABILITY STUDY ~

- a trench and filling it with material or by injecting it through a well. A "wall" of treatment material is placed in the ground, either by digging
- At Paducah we will be injecting the treatment material into the RGA.
- Contaminated groundwater flows through the treatment material.
- The groundwater where this study is located is contaminated with TCE and
- The treatment material reacts with or adsorbs the contamination.
- This test will be using zero-valent iron as the treatment material.
- Zero-valent iron reacts with TCE to form ethene and ethane
- Zero-valent iron adsorbs Tc-99.
- the downgradient side of the PTZ will be reduced to acceptable levels When designed, installed and functioning properly, contamination on
- PTZ thickness and materials depend on type and concentrations of contaminants in groundwater.

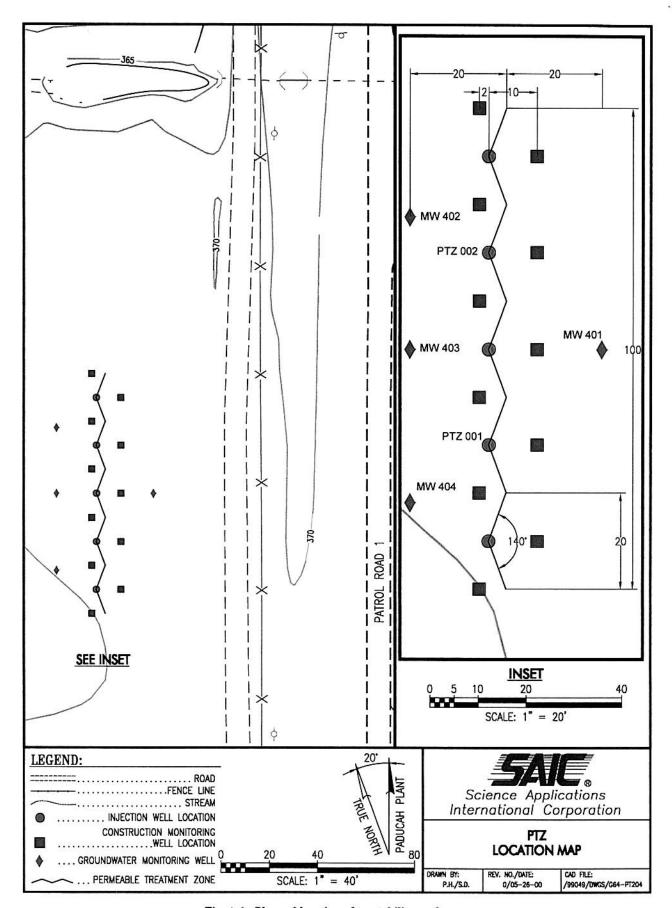


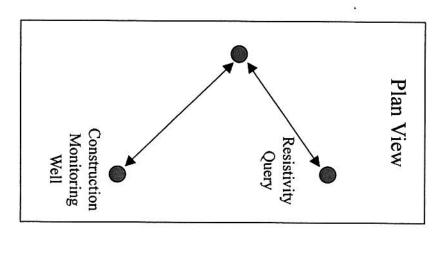
Fig. A.1. Planned location of treatability study zone

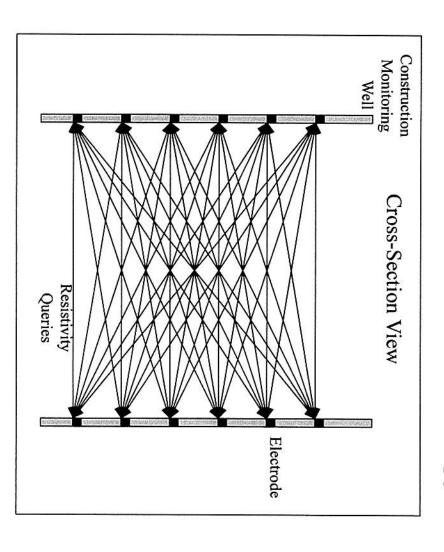
Baseline Sampling

Groundwater sampling

- Four multi-level groundwater monitoring wells
- One well upgradient of PTZ location
- Three wells downgradient of PTZ location
- Each well capable of providing samples from 5 to 7 different depths
- Two rounds of baseline samples will be collected.
- First set of samples collected at least two weeks prior to PTZ injection
- Second set of samples collected just prior to first injection
- Groundwater level measurements collected from eleven construction monitoring "wells" just prior to first injection

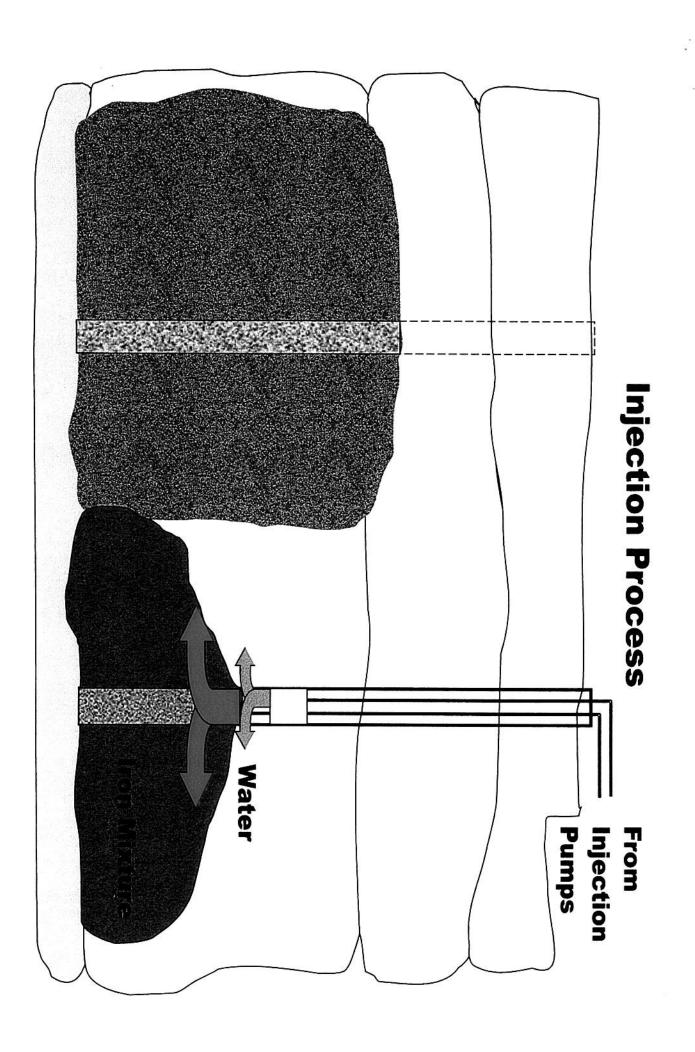
Pre-Construction Schematic of Methodology PTZ Construction Monitoring





Baseline Sampling

- Electrical Resistivity Tomography
- using the eleven construction monitoring "wells" 3-D picture of resistivity character through area of PTZ prior to first injection
- Concept and data processing similar to that used in medical "cat" scans
- adjacent monitoring "wells." Resistivity measurements are made between pairs of electrodes in
- "picture" of the volume between the wells Resistivity data then are processed by computer to create a 3-D



PTZ Installation

- First a boring will be drilled to just below base of RGA (approximately 120 feet deep).
- After the boring is drilled, the injection equipment will be lowered inside following: the drill pipe to the bottom of the hole. Equipment consists of the
- high-pressure hoses to carry water and treatment media to the bottom of the hole:
- a sealing device called a packer to keep the water and treatment media from blowing back up the hole; and
- high pressures nozzles that will force the water and treatment media to go in a specific direction in the RGA

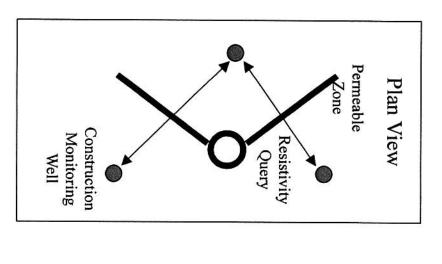
PTZ Installation (cont'd)

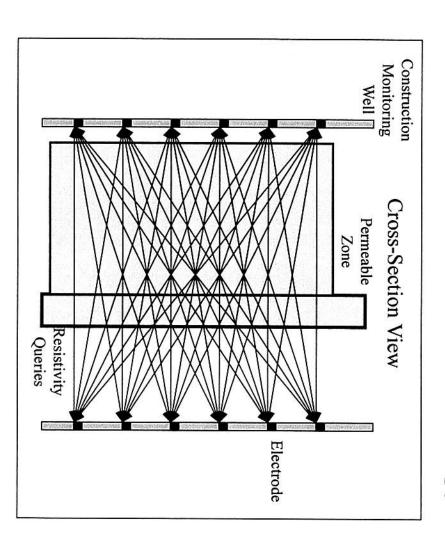
- Once the injection equipment is in place and checked, the treatment media will be mixed for injection:
- zero-valent iron to destroy TCE and adsorb Tc-99;
- guar gum (a food additive) to make a gel to allow the iron to be pumped;
- borax to make the gel thick enough to keep the iron suspended;
- cellulase enzyme to break down the gel when injection is completed; and
- water to dissolve the powdered materials.
- When the treatment media is mixed, injection begins immediately.
- High-pressure water and treatment media are pumped down the hole through individual hoses
- The high-pressure water creates or "cuts" a weak spot in the RGA
- grow as the media is pumped, like forcing a wedge deeper as you split a The treatment media is pumped into the weak spot, which continues to

PTZ Installation (cont'd)

- injection equipment are slowly raised. As the treatment media is injected into the RGA, the drill pipe and
- Raising the drill pipe and injection equipment causes the split or fracture to grow both laterally and vertically, creating a "panel" of treatment media
- The injection process will continue until the top of the RGA is reached.
- with grout or a monitoring well will be installed in the treatment media. After injection is completed, the rest of the boring either will be filled
- approximately 100 feet in length. Process will be repeated in four more borings to create a PTZ

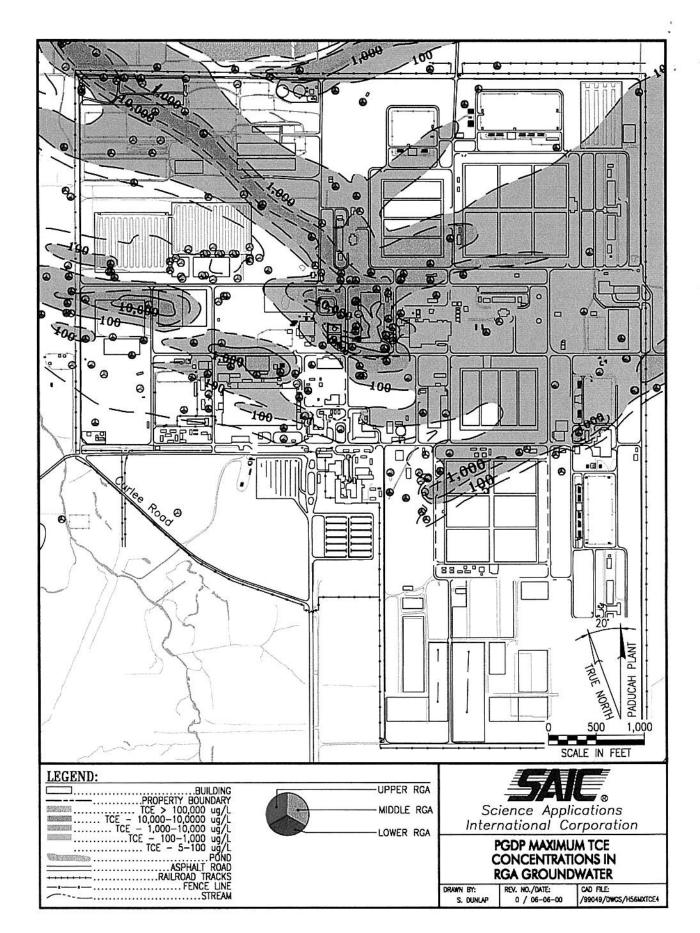
Post-Construction Schematic of Methodology PTZ Construction Monitoring





Post-Construction Monitoring

- will be used again to measure resistivity in the RGA After each injection is completed, the construction monitoring "wells"
- determine if any gaps exist Using electrical resistivity tomography techniques the changes in resistivity will be used to "map" the location of the PTZ panel and
- Additional injections may be required to repair any significant gaps
- Five days after the last injection, groundwater sampling will begin
- with performance evaluations scheduled at six-month intervals Post-construction monitoring currently is scheduled to last three years,
- Decision on what to do with the PTZ will be made at the end of the test.



PGDP Maximum TCE Concentrations in RGA Groundwater

- groundwater remedial action decisions. Treatability Study is being performed under CERCLA to support
- Two basic questions to be answered:
- Can a permeable treatment zone (PTZ) be installed in the RGA?
- Most PTZs are shallow and installed using trenching methods

Paducah PTZ will be installed at depths between 50 and 120 feet below surface.

- Paducah PTZ will be between 50 and 70 feet in height.
- Will a permeable treatment zone in the RGA be effective?
- would flow around PTZ. RGA is more permeable than many aquifers; PTZ may act as barrier and water
- RGA has a higher water flow rate; water may flow too fast through PTZ resulting in not enough reaction time.
- Chemical reactions or bacteria could cause plugging of PTZ converting the PTZ to
- of the groundwater remediation strategy If successful, permeable treatment zones may become an integral part

Paducah Gaseous Diffusion Plant (PGDP) Site Specific Advisory board (SSAB) 2000 Workplan

*	FOIA	PACRO	On-site Disposal Cell	Vortec	Soils Operable Unit	Unit Could Operation	Division Opposition	Surface Water Operable	Unit	Ground Water Operable	recommendations	discussion and	Documents/plans for	Core Team Update	committee reports	Administrative issues and	ITRD	Mountain	Scrap Metal/Drum	EM&EF	ES&H Issues	Ongoing Discussion Items	ISSUE F
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Fact Sheets 1,440.00 960.00 Mailing List Maintenance 1,824.00 152.00
152.00
152.00
1,452.00
152.00
1,936.00 960.00 1,216.00 0
9,000.00 900.00 1,694.00 6,658.00 480.00 608.00 1,500.00

Notes: Office Rental includes:
-2 months rent
- telephone

office supplies